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are prevalent. I shall never cease to regret having had no telescope to take ashore when I visited Hawaii in 1906. I shall certainly take the first opportunity that occurs to test the solar definition on a small oceanic island.

KODAIKANAL, June 15, 1915.

AN ERROR IN RADIAL VELOCITY OBSERVATIONS ARISING FROM NON-UNIFORM SLIT ILLUMINATION.

BY REYNOLD K. YOUNG.

It has been a common experience with radial velocity observers to obtain spectrograms giving unaccountably large residuals. For a three prism instrument the probable error of measurement as determined from the agreement of the lines is certainly less than one-half a kilometer and often as small as one or two-tenths, while the mean result may be in error by as much as three kilometers. For a one-prism instrument the probable error of measurement of a late type star is less than one kilometer, yet plates have been found which give velocities as much as ten kilometers from the truth.

These large errors have been ascribed sometimes to changes within the star, sometimes to flexure or temperature effects of the spectrograph and sometimes to the guiding or non-uniform illumination of the slit. Some results obtained here recently from plates taken with a one-prism spectrograph seem to indicate that the major portion of such errors may be ascribed to the latter cause.

On June 1st two plates were taken of *α Boötis*. For the first, the image was held on the south edge of the slit and for the second on the north edge. This procedure was followed purposely to ascertain if it were possible to produce different velocities by the method of guiding. Both plates are weak in the violet but there is no doubt that there is a relative displacement indicated by the two plates coresponding to a velocity of about twenty-five kilometers. A few days later the experiment was repeated, save that three plates were secured: the first with the slit north of the star, the second guided normally and the third with the slit south of the star. These plates confirm the previous result. The first plate gives a velocity about thirteen kilometers more positive than the second, and the third a result about thirteen kilometers more negative. Of the three plates, the first is weak in the violet, but the second and third appear to be perfectly normal plates.

In the June number of this journal, Dr. W. W. CAMPBELL gives results from observations of *Venus* which seem to show that the same effect may be present when guiding on the terminator of a planet's image.

DOMINION OBSERVATORY, July 3, 1915.